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Forest Insect & Disease Management

Evaluation Report

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ECTOMYCORRHIZAE ON FOUR YEAR-OLD RED PINE SEEDLINGS FROM EVELETH NURSERY

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Figure 1. Typical Ectomycorrhizal
Red Pine Feeder Root.

During 1975, Region 9 requested that the St. Paul Field Office evaluate the ectomycorrhizae development on the red pine at Eveleth Nursery, Eveleth, Minnesota. Examination of the red pine seedlings at Eveleth showed that the three-year-old seedlings ended the growing season with an average of 12.9% ($SE_{\bar{x}} 3.8$) of the feeder roots mycorrhizal on each seedling.

Two beds of three-year-old seedlings were not lifted during the spring of 1975. These beds were examined for mycorrhizae development during the three- to four year development period. Eighty trees were lifted at random from the beds for examination. Ten percent of the roots

on each tree were selected for examination. The samples were examined using sequential sampling with a minimum of 20 seedlings and a maximum of 80 seedlings. The feeder roots on each sample were classified as ectomycorrhizal or nonectomycorrhizal based upon the presence of mantle formation, usually accompanied by forking of the feeder roots (Figure 1).

The average percentage of mycorrhizal feeder roots on each seedling increased from 12.9% as a three-year-old seedling to 21.6% ($SE_{\bar{x}} .5$) as a four-year-old seedling. Soils analysis in the beds showed over 200 lbs/ac of available phosphorus, 160 lbs/ac of available potassium and a pH of 6.0.

This mycorrhizal development is considered low when compared to the 60-90 percent development in natural four-year-old red pine around the nursery.